AMENDMEND TO CLAIMS

Please amend claims 1-3, 5-25, and 27-29 as following:

1. (*Currently amended*) A transmitter operating in a switching-mode, the transmitter comprising:

a signal decomposition unit decomposing a modulated digital signal into a first signal and a second signal, both being expressed in polar coordinates;

an adaptive predistorter, coupled to the signal decomposition unit, configured to distort the first and second signals respectively in accordance with one or more of distorting parameters; [and]

a phase equalizer, coupled to the adaptive predistorter, configured to equalize a time delay between the distorted first and second signals in response to a [measurement] first control signal provided by a feedback loop operating on a sample of an amplified RF signal to generate equalized first and second signals;

a phase lock loop (PLL) responsive to the equalized second signal, a second control signal from the feedback loop, a reference frequency signal and a carrier frequency signal for producing a radio frequency (RF) signal, wherein a power amplifier is coupled to the PLL for receiving the RF signal and to produce said amplified RF signal responsive to the equalized first signal;

and

means for receiving and transmitting said amplified RF signal [from a power amplifier, wherein the power is coupled to a voltage controlled oscillator and controlled by the first signal and a phase-modulated signal coupled from the voltage controlled oscillator to produce the RF signal].

2. (Currently amended) The transmitter of claim 1, wherein the modulated digital signal is provided from a baseband processor, the first signal is an amplitude signal,

and the second signal is a phase signal[, and the phase-modulated signal is produced from the second signal].

3. (Currently *amended*) The transmitter of claim 2, wherein the feedback loop includes a down-converter coupled to the amplifier and the output of the PLL, a demodulation unit coupled to the down-converter and a measurement unit coupled to the demodulation unit, and provides feedback signals, said feedback signals comprising at least the first and the second control signals [to at least the phase equalizer].

4. (*Previously amended*) The transmitter of claim 3, wherein the down-converter converts the sample to a lower frequency to be demodulated in the demodulation unit to produce a demodulated sample, and the demodulated sample is measured in the measurement unit for producing the feedback signals.

5. (Currently amended) The transmitter of claim 1, wherein the equalized first signal is provided to indirectly control the power amplifier.

6. (Currently amended) The transmitter of claim 5, wherein the equalized first signal activates a control unit to generate a bias control signal and a voltage signal in response to the equalized first signal to control the power amplifier.

7. (Currently amended) The transmitter of claim 5, further comprising a first modulation path and a second modulation path, both operating on the equalized second signal.

8. (Currently amended) The transmitter of claim 7, wherein the first modulation path provides a first input signal to the [voltage controlled oscillator] PLL in response to the equalized second signal processed in a phase gain unit.

9. (Currently amended) The transmitter of claim 8, wherein the equalized second signal, after processed in the phase gain unit, is converted to an analog signal.

10. (Currently *amended*) The transmitter of claim 8, wherein the second modulation path provides a second input signal to the [voltage controlled oscillator] PLL in response to the equalized second signal processed in a phase offset unit.

11. (currently *amended*) The transmitter of claim 10, wherein the PLL comprising: a phase detector responsive to the reference frequency signal and a divided loop output signal to provide an output signal; a loop filter coupled to the output of the phase detector; an adder for summing an output of the loop filter and an output of the phase offset unit; a voltage controlled oscillator coupled to an output of the adder for providing the RF signal; and a divider responsive to the RF signal and the first input signal from the first modulation path for providing the divided loop output signal [an output of a loop filter and an output of the phase gain unit are coupled together to modulate the voltage controlled oscillator] .

12. (*Currently amended*) A method for controlling a transmitter to operate in a switching-mode, the method comprising:

decomposing a modulated digital signal into a first signal and a second signal, both being expressed in polar coordinates;

distorting the first and second signals respectively in accordance with one or more of distorting parameters; and

equalizing a time delay between the distorted first and second signals in response to a first control signal [measurement] provided by a feedback loop operating on a sample of an amplified RF signal to generate equalized first and second signals; [from a power amplifier]

producing a radio frequency (RF) signal using a phase lock loop (PLL) responsive to the equalized second signal, a second control signal from the feedback loop, a reference frequency signal and a carrier frequency signal;

amplifying said RF signal using a power amplifier responsive to the equalized first signal to produce said amplified RF signal;

transmitting said amplified RF signal

[, wherein the power amplifier is coupled to a voltage controlled oscillator and controlled by the first signal and a control signal coupled from the voltage controlled oscillator to produce the RF signal].

13. (Currently Amended) The method of claim 12, wherein the modulated digital signal is provided from a baseband processor, the first signal is an amplitude signal, and the second signal is a phase signal[, and the control signal is produced from the second signal].

14. (canceled) [The method of claim 12, further comprising providing feedback signals by the feedback loop, said to at least a phase equalizer, the feedback loop formed by a down-converter, a demodulation unit coupled to the down-converter and a measurement unit coupled to the demodulation unit].

15. (Currently *amended*) The method of claim 12 [14], further comprising converting the sample of said amplified RF signal to a lower frequency to provide a converted sample; demodulating said converted sample [be demodulated in the demodulation unit] to produce a demodulated sample, [wherein] measuring the demodulated sample [is measured in the measurement unit for] to produce[ing the] feedback signals, wherein said feedback signals comprising at least the first and the second control signals .

16. (Currently amended) The method of claim 12, wherein the equalized first signal is provided to indirectly control the power amplifier.

17. (Currently *amended*) The method of claim 16, further comprising activating a control unit by the equalized first signal to generate a bias control signal and a voltage signal in response to the equalized first signal to control the power amplifier.

18. (Currently *amended*) The method of claim 16, further comprising providing a first modulation path and a second modulation path, both operating on the equalized second signal.

19. (Currently *amended*) The method of claim 18, further comprising providing a first input signal by the first modulation path to the PLL [voltage controlled oscillator] in response to the equalized second signal processed in a phase gain unit.

20. (Currently *amended*) The method of claim 19, comprising converting the equalized second signal, after processed in the phase gain unit, to an analog signal.

21. (Currently *amended*) The method of claim 19, further comprising providing a second input signal in the second modulation path to the PLL [voltage controlled oscillator] in response to the equalized second signal processed in a phase offset unit.

22. (*Canceled*) [The method of claim 21, further comprising forming the second modulation path by a phase-locked loop (PLL) that is formed by an adder adding an output of a loop filter with a phase gain to modulate the voltage controlled oscillator in the phase-locked loop.]

23. (*Currently amended*) A method for controlling a transmitter to operate in a switching-mode, the method comprising:

generating a radio frequency signal using a phase-locked loop (PLL) configured to receive an adaptive phase gain signal and a phase offset control signal in response to a predistorted baseband phase signal, a carrier frequency signal, a reference frequency signal, wherein the PLL includes a modulated voltage-controlled-oscillator (VCO);

compensating a frequency drift and other non-linear effects of [a] said modulated voltage-controlled-oscillator (VCO) and a power amplifier by predistorting a baseband amplitude signal and the [a] baseband phase signal in accordance

with one or more distorting parameters that are determined based on a sample of an output of the transmitter, wherein the baseband amplitude signal and the phase signal are expressed in terms of polar coordinates, and the sample is down-converted with an output from the VCO and demodulated to facilitate a predistortion calibration in a predistortion calibration unit to update the distorting parameters, and one output from the predistortion calibration unit used to adjust the predistorted phase signal to generate said phase gain signal;

[providing a phase-locked loop (PLL) with an adaptive phase gain and a phase offset control in response to the phase signal;] and

amplifying said radio frequency signal [an output of the PLL] in response to [modulating the power amplifier with] the predistorted baseband amplitude signal using the amplifier [and an output coupled from the modulated voltage controlled oscillator (VCO)] to provide said output of said transmitter.

24. (*Currently amended*) The method of claim 23, wherein the sample is downconverted and demodulated using said output from the VCO to regenerate a first signal a second signal and a third signal in a digital format, the method further comprising:

[demodulating samples of an output of the power amplifier and the modulated voltage controlled oscillator to regenerate a first signal, a second signal and a third signal in a digital format;]

comparing the [demodulated] first [and] , second and the third signals to the baseband amplitude [signal] and phase signals [with reference to the third signal] to output [,] respective[ly] comparing results; and

producing feedback control signals in response to the comparing results to update the one or more distorting parameters, and other related parameters.

25. (*Currently amended*) The method of claim 24, still further comprising equalizing a delay time between the predistorted baseband amplitude and phase signals.

26. (*Original*) The method of claim 25, wherein the delay time is provided by one of the feedback control signals.

27. (*Currently amended*) The method of claim 23, wherein the step of generating said radio frequency signal [further] comprising:

[providing a control input to the modulated voltage-controlled oscillator (VCO) that has a phase-modulated output;]

comparing two phase-modulated signals in a phase detector to produce an output representing the phase difference of the two phase-modulated signals, wherein one of the phase-modulated signals is said [a] reference frequency signal provided by [from] a controller and the other one of the phase-modulated signals is from a feedback frequency divider in the phase-locked loop;

filtering the output of the phase detector using a loop filter;

adding an output of the loop filter using a first adder to a signal generated based on the baseband phase signal and provide a sum signal as the input of the VCO;

providing said [including a] feedback frequency divider in a feedback loop which is coupled to the output of the VCO;

and

receiving a signal in a modulator from [an] a second adder in the phase-locked loop that couples [phase-modulated baseband] a signal, generated based on the phase signal, and a carrier frequency signal together to produce a digital bit stream used to control a divisor of the feedback frequency divider.

28. (*Currently amended*) The method of claim 23, further comprising [wherein] generating [providing] said reference frequency using a controller [receives] responsive to said [a] [phase-modulated] baseband phase signal and a carrier frequency signal [to produce a digital bit stream used to control a reference frequency coupled to an input of a phase detector in the phase-locked loop].

29. (*Canceled*) The method of claim 23, further comprising wherein the VCO operates by:

coupling the phase-modulated baseband signal to an input node of the VCO which is used by the phase-locked loop;

using an adaptive phase gain to scale the phase-modulated baseband signal before being coupled to the input of node of the VCO of the phase-locked loop;

using an adaptive phase offset to change the phase-modulated baseband signal which is coupled to an input of phase locked loop; and

using an adaptive digital predistortion signal to facilitate formation of the adaptive phase gain and phase offset signals.